



Claim Amendments

please amend claims 1, 5, 12, 18-22 as follows.

1. (currently amended) A method for ~~controlling~~ calibrating a semiconductor photolithographic process comprising an overlay registration offset of a pilot lot specification using at least one pilot lot of process substrates, said calibration for use in sequentially processing a subsequent lot of process substrates ~~in~~ a according to said semiconductor photolithographic process comprising the steps of:

defining an overlay registration specification of [[a]] first pilot lot and at least one additional lot on a user interface, said pilot first lot comprising a plurality of process substrates for calibrating said photolithographic process;

performing [[a]] said photolithographic process on said first pilot lot;

measuring an overlay offset value of said first pilot lot;
and

automatically performing ~~photolithography~~ said photolithographic process on said at least one additional lot when said overlay offset value conforms to said overlay registration specification.

U.S.S.N. 10/656,757

2. (original) The method of claim 1 wherein said photolithographic process is automatically performed on said first pilot lot.

3. (original) The method of claim 1 wherein said at least one additional lot is a second pilot lot.

4. (original) The method of claim 1 wherein said at least one additional lot is not a pilot lot.

5. (currently amended) A method for ~~controlling overlay registration when fabricating a microelectronic product~~ comprising calibrating a microelectronic product photolithographic process comprising an overlay registration specification using a plurality of pilot lot of process substrates, said calibration for use in sequentially processing a subsequent lot of process substrates in said microelectronic photolithographic process comprising the steps of:

providing a photolithographic process cell comprising a photolithographic process tool, a photolithographic measurement tool and a computer controller;

U.S.S.N. 10/656,757

introducing into the photolithographic process cell a new product order comprising a first lot and at least one additional lot, each having an overlay registration specification which is recorded in the computer controller;

dividing the first lot into a first pilot lot of process substrates and a second pilot lot of process substrates, each pilot lot to be sequentially processed for calibrating said photolithographic process, said sequential processing comprising processing in the photolithographic process tool and measuring in the photolithographic measurement tool while being controlled by the computer controller;

processing the first pilot lot in-line automatically within photolithographic process tool, measuring the overlay registration thereof in-line automatically within the photolithographic measurement tool and assuring conformance thereof with the overlay registration specification according to the computer controller;

processing the second pilot lot in-line automatically within the photolithographic process tool, measuring the overlay registration thereof in-line automatically within the photolithographic measurement tool and assuring conformance thereof with the overlay registration specification according to the computer controller; and

U.S.S.N. 10/656,757

processing the at least one additional lot in-line automatically within the photolithographic process tool.

6. (original) The method of claim 5 wherein conformance of the first pilot lot is assured prior to processing the second pilot lot.

7. (original) The method of claim 5 wherein conformance of the second pilot lot is assured prior to processing the at least one additional lot.

8. (original) The method of claim 5 wherein an overlay registration of the at least one additional lot is neither measured nor conformance thereof assured.

9. (original) The method of claim 5 wherein the new product order is for a microelectronic product selected from the group consisting of semiconductor products and ceramic substrate products.

10. (original) The method of claim 5 wherein the photolithographic process tool is a stepper.

U.S.S.N. 10/656,757

11. (original) The method of claim 5 wherein the photolithographic process tool is a scanner.

12. (currently amended) A method for ~~controlling~~ calibrating a photolithographic process according to an overlay registration specification using a plurality of pilot lots of process substrates, said calibration for use in sequentially processing a subsequent lot of process substrates according to said photolithographic process when fabricating a semiconductor product comprising:

providing a photolithographic process cell comprising a photolithographic process tool, a photolithographic measurement tool and a computer controller;

introducing into the photolithographic process cell a new semiconductor product order comprising a first lot and at least one additional lot, each lot comprising a plurality of process substrates having an overlay registration specification which is recorded in the computer controller;

dividing the first lot into a first pilot lot and a second pilot lot to be sequentially processed in the photolithographic process tool and measured in the photolithographic measurement tool to calibrate said photolithographic process, while said sequential processing being controlled by the computer controller;

U.S.S.N. 10/656,757

processing the first pilot lot in-line automatically within photolithographic process tool, measuring the overlay registration thereof in-line automatically within the photolithographic measurement tool and assuring conformance thereof with the computer controller;

processing the second pilot lot in-line automatically within the photolithographic process tool, measuring the overlay registration thereof in-line automatically within the photolithographic measurement tool and assuring conformance thereof with the overlay registration specification according to the computer controller; and

processing the at least one additional lot in-line automatically within the photolithographic process tool.

13. (original) The method of claim 12 wherein conformance of the first pilot lot is assured prior to processing the second pilot lot.

14. (original) The method of claim 12 wherein conformance of the second pilot lot is assured prior to processing the at least one additional lot.

U.S.S.N. 10/656,757

15. (original) The method of claim 12 wherein an overlay registration of the at least one additional lot is neither measured nor conformance thereof assured.

16. (original) The method of claim 12 wherein the photolithographic process tool is a stepper.

17. (original) The method of claim 12 wherein the photolithographic process tool is a scanner.

18. (currently amended) A pilot production overlay offset control system for ~~connecting to a photolithography machine~~ calibrating a semiconductor photolithographic process comprising an overlay registration specification using at least one pilot lot of process substrates, said calibration for use in sequentially processing a subsequent lot of process substrates according to said photolithographic process comprising:

a user interface for defining a fabrication specification for a first pilot lot and at least one additional lot, said pilot lot comprising a plurality of process substrates for calibrating said photolithographic process, said user interface further ~~and~~ for inquiring and/or managing an overlay offset datum of at least said first pilot lot; and

a computer controller providing said user interface, said computer controller [[and]] for controlling ~~a lithography~~ said photolithographic process on said first pilot lot based on said fabrication specification defined by said user interface, and for performing ~~a lithography~~ said photolithographic process on said at least one additional lot based on said overlay offset datum of said first p[[8]]ilot lot.

19. (currently amended) The system of claim 18 wherein said computer controller provides for automatically controlling said ~~lithography~~ photolithographic process on said first pilot lot and said at least one additional lot.

20. (currently amended) The system of claim 18 wherein said at least one additional lot is a second pilot lot comprising a plurality of process substrates for calibrating said photolithographic process.

21. (currently amended) The system of claim 18 wherein said at least one additional lot is ~~not a pilot lot~~ a separate lot of process substrates.

U.S.S.N. 10/656,757

22. (currently amended) A system for ~~controlling~~ calibrating a photolithographic process comprising an overlay registration specification using a plurality of pilot lots of process substrates, said calibration for use in sequentially processing a subsequent lot of process substrates in a photolithographic process when fabricating a microelectronic product comprising:

a photolithographic process cell comprising:

a photolithographic process tool;

a photolithographic measurement tool; and

a computer controller, wherein the computer controller

is:

programmed with a ~~photolithographic~~ said overlay registration specification ~~[[of]]~~ comprising a new product order of the microelectronic product comprising a plurality of process substrates; and

programmed to sequentially and automatically in-line process and qualify said photolithographic process according to a first pilot lot of ~~[[a]]~~ said new product order and a second pilot lot of ~~[[the]]~~ said new product order, said first and second pilot lots comprising subsets of said new product order, said first and second pilot lots processed through the photolithographic process tool and the photolithographic

U.S.S.N. 10/656,757

measurement tool prior to processing an additional new product order lot of the new product in-line automatically through the photolithographic process tool.

23. (original) The system of claim 22 wherein the first pilot lot is qualified prior to processing the second pilot lot.

24. (original) The system of claim 22 wherein the second pilot lot is qualified prior to processing the at least one additional lot.

25. (original) The system of claim 22 wherein the new product order is for a semiconductor product.

26. (original) The system of claim 22 wherein the new product order is for a ceramic substrate product.

27. (original) The system of claim 22 wherein the photolithographic process tool is a stepper.

28. (original) The system of claim 22 wherein the photolithographic process tool is a scanner.